

Turning now to the merits of the Office Action of May 8, 2007, it is noted that applicants' election with traverse, filed in this matter on April 9, 2007, has been acknowledged, and duly considered. Responsive to the arguments presented, the claims which were formerly separately included in Group I (claims 1 to 9) and Group II (claims 10 to 18) have been examined in this Patent Application. The position has been maintained that unity of invention is not present for the remaining claims, 19 to 38, and claims 19 to 38 have not been examined.

Noting that the requirement for restriction has been made final, the present Reply has been directed only to the examined claims 1 to 18. However, applicants respectfully reserve the right to request reconsideration of the position taken in the Office Action of May 8, 2007, relative to the unity of invention between claims 1 to 18 and 19 to 38.

Claims 1 to 5, 7, 10 to 14 and 16 are provisionally rejected under 35 U.S.C. §101 because the identified claims are considered to claim the same invention as that of claims 1 to 6 and 22 to 27 of copending U.S. Patent Application No. 11/344,028. The undersigned thanks the Examiner for noting this issue, in furtherance of the procedures outlined in Part (I)(B) of Section 804 of the Manual of Patent Examining Procedure. However, it is submitted that in view of the discussion which is to follow, this provisional double patenting rejection will constitute the only rejection remaining in this Patent Application, and for this reason, should not be continued.

Claims 1 to 5, 7, 10 to 14 and 16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over a proposed combination of U.S. Patent No. 5,242,253 (Fulmer) and U.S. Patent No. 5,131,276 (Kibblewhite). Claims 6 and 15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the proposed combination of Fulmer and Kibblewhite, in further combination with U.S. Patent No. 6,726,960 (Sanduja et al.), and claims 8, 9, 17 and 18 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the proposed combination of Fulmer and Kibblewhite, in further combination with an International Publication, No. WO 00/63565 (Hoffmeister et al.).

These rejections of claims are, therefore, based primarily on a proposed combination of Fulmer and Kibblewhite, either alone or in further combination with additionally identified documents. Applicants respectfully traverse these formulated rejections for reasons which follow.

At Paragraph 6 of the Office Action of May 8, 2007, it is correctly stated that Fulmer discloses a thread forming fastener including a head for engagement by a tool, for applying a torque to the fastener, and a body portion extending from the head and including thread forming portions.

Paragraph 6 of the Office Action also correctly states that "Fulmer fails to disclose an ultrasonic transducer coupled with the fastener, for making ultrasonic load measurements in the fastener". However, in Paragraph 7 of the Office Action, Kibblewhite is incorrectly cited for purposes of teaching "an

ultrasonic transducer 19 coupled with the fastener 10, for making ultrasonic load measurements in the fastener 10".

At Paragraph 7 of the Office Action, it is correctly stated that Kibblewhite discloses an ultrasonic transducer coupled with a fastener, for making ultrasonic load measurements in the fastener. However, following this, it is incorrectly suggested that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple an ultrasonic transducer for load measurements" to a thread forming fastener, and that motivation for this can be found in Kibblewhite, at lines 15 and 16 of column 6, which state that the disclosed "load indicating member can be formed from a bolt, rod, rivet, stud or other suitable structural element".

Fulmer's disclosure was originally acknowledged in the specification for this Patent Application, at lines 9 to 12 of page 1. From Fulmer, the person of ordinary skill in the art at the time the present invention was made would have known that "[c]onsiderable torque is required in forming the threads on the screw's shank" (Col. 1, lines 21 and 22), and that the disclosed thread forming portion can be used to "reduc[e] the force required for thread-forming" (Col. 8, lines 7 to 15), making it "possible to achieve the thread-forming operations in a much easier manner since a lower torque is required" (Col. 3, lines 61 to 68).

Kibblewhite's disclosure was also acknowledged in the specification for this Patent Application, at lines 14 to 21 of

page 2, and at lines 3 to 7 of page 5. From Kibblewhite, the person of ordinary skill in the art at the time the present invention was made would have known that "ultrasonic tension measurement is recognized as a highly accurate laboratory tightening method for calibration, application testing and for tightening very critical joints" (Col. 1, lines 57 to 61).

However, as is further explained in the specification for this Patent Application, noting lines 2 to 7 of page 6, and as a result of the considerable amount of torque required to perform the thread-forming operations associated with the run-down of a thread forming fastener, even in view of the reduced torque required for the run-down of Fulmer's thread forming fasteners, the person of ordinary skill in the art at the time the present invention was made would have known that heat generated as a result of the thread-forming work that takes place during the thread-forming run-down stage of the installation of a thread forming fastener would result in a slight increase in temperature in both the thread forming fastener and the resulting joint.

As is further explained in the specification for this Patent Application, noting lines 7 to 9 and 19 to 22 of page 6, the person of ordinary skill in the art at the time the present invention was made would also have known that such an increase in temperature could cause errors in ultrasonic load measurements to be taken in thread forming fasteners because of thermal expansion effects, and that without compensation, such thermal effects

could result in inaccuracies of load measurement on the order of 5% to 20%, depending on the thread forming fastener, the joint and the assembly process to be used.

Moreover, noting lines 9 to 19 of page 6, the person of ordinary skill in the art at the time the present invention was made would also have known that when using ultrasonics for inspecting the load in a fastener, it is usual to measure the temperature of the fastener or the joint in order to compensate for the effects of thermal expansion, but that in conjunction with a thread forming fastener, the average temperature increase due to the heat generated during thread formation could not have been measured directly during the installation process and would have been subject to variations in material, friction and heat conduction properties of the joint components.

It is respectfully submitted that, knowing this, the person of ordinary skill in this art at the time the present invention was made would not have considered it obvious to couple an ultrasonic transducer known to be useful for load measurements in critical joints to a thread forming fastener known to be subject to thermal effects that could result in inaccuracies of load measurement on the order of 5% to 20%, and would not have been motivated to do so by any disclosure found in Kibblewhite.

A "Declaration of Ian E. Kibblewhite", one of the two joint inventors named in this U.S. Patent Application, is enclosed with this Reply. Paragraphs 1 through 11 of the

Declaration confirm the foregoing observations taken from the specification for this Patent Application, and the disclosures of Fulmer and Kibblewhite, as well as the understanding of the person of ordinary skill in this art at the time the present invention was made.

As is further confirmed in Paragraph 12 of the Declaration, based on the disclosures of the cited patents to Fulmer and Kibblewhite, and without the benefits of hindsight learned from the specification for this Patent Application, the person of ordinary skill in the art, at the time the present invention was made, would not have known how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process, and would not have known how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener.

Noting Paragraph 13 of the Declaration, and without knowing how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process, and how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener, the person of ordinary skill in the art at the time the present invention was made would have expected that the thermal effects encountered in the run-down of a thread forming fastener would result in inaccuracies of load measurement on the order of 5% to 20%.

As a consequence, and as is confirmed by Paragraph

14 of the Declaration, the person of ordinary skill in the art at the time the present invention was made would not have known to, or even considered coupling the ultrasonic transducer of Kibblewhite with the thread forming fastener of Fulmer because the expected inaccuracies in the load measurements made during run-down of the thread forming fastener would not have been considered appropriate for critical joint applications.

Contrary to the foregoing conclusion, Paragraph 7 of the Office Action of May 8, 2007, takes the position that motivation for coupling the ultrasonic transducer of Kibblewhite with the thread forming fastener of Fulmer can be found in Kibblewhite, at lines 15 and 16 of column 6, which state that the disclosed "load indicating member can be formed from a bolt, rod, rivet, stud or other suitable structural element" (emphasis added).

However, noting Paragraph 15 of the Declaration, and because the person of ordinary skill in the art at the time the present invention was made would not have known how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process, and how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener, and would have expected inaccuracies not considered suitable for critical joint applications, the person of ordinary skill in the art at the time the present invention was made would have expected that thread forming fasteners were not "suitable" for

use as the lead indicating member of Kibblewhite.

As a consequence, it is respectfully submitted that the statement taken from lines 15 and 16 of column 6 of Kibblewhite, without the benefits of hindsight learned from the specification for this Patent Application, would not have provided motivation for the person of ordinary skill in the art at the time the present invention was made to couple the ultrasonic transducer of Kibblewhite with the thread forming fastener of Fulmer.

It is further respectfully submitted that the proposed combination of Fulmer and Kibblewhite which was presented in the Office Action of May 8, 2007, does not satisfy the subsequently issued "Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc." (OG Notices: 06 Nov 2007).

Under these Guidelines, when combining elements to reject a claim, it must first be established "that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference".

As is noted in Paragraph 3 of the Declaration, the Office Action correctly states that Fulmer discloses a thread forming fastener including a head for engagement by a tool, for applying a torque to the fastener, and a body portion extending from the head and including thread forming portions. Also, as is noted in Paragraph 4 of the Declaration, the Office Action

correctly states that Kibblewhite discloses an ultrasonic transducer coupled with a fastener, for making ultrasonic load measurements in the fastener. Accordingly, the first element of the required analysis has been met.

It must then be established "that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely would have performed the same function as it did separately".

As is noted in Paragraph 12 of the Declaration, the person of ordinary skill in the art at the time the present invention was made would not have known how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process, and would not have known how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener. Consequently, one of ordinary skill in the art could not have combined the elements as claimed by known methods.

It must further be established "that one of ordinary skill in the art would have recognized that the results of the combination were predictable".

As is noted in Paragraph 13 of the Declaration, without knowing how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process, and how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener, the person of ordinary skill in the art at the time the present

invention was made would have expected that the thermal effects encountered in the run-down of a thread forming fastener would result in inaccuracies of load measurement on the order of 5% to 20% which, as is further noted in Paragraph 14, would not have been considered appropriate for critical joint applications.

Consequently, and as is noted in Paragraph 16 of the Declaration, the person of ordinary skill in the art at the time the present invention was made could not have predicted that a thread forming fastener would be a suitable structural element for use as the load indicating member disclosed by Kibblewhite, and could not have predicted that the ultrasonic transducer of Kibblewhite could be effectively coupled with the thread forming fastener of Fulmer.

As a consequence, it is respectfully submitted that the proposed combination of Fulmer and Kibblewhite presented in the Office Action of May 8, 2007, does not satisfy the subsequently issued Examination Guidelines, and is not an appropriate basis for the rejection of applicants' claims under 35 U.S.C. §103(a).

The Examination Guidelines further indicate "that combining known prior art elements is not sufficient to render the claimed invention obvious if the results would not have been predictable to one of ordinary skill in the art", and that "[w]hen the prior art teaches away from combining certain known elements, discovery of successful means of combining them is more likely to be nonobvious".

As is noted in Paragraph 15 of the Declaration, the

person of ordinary skill in the art at the time the present invention was made would not have expected that thread forming fasteners were suitable for use as a load indicating member useful for critical joint applications. Because Kibblewhite is directed to critical joint applications, it is submitted that this would have taught away from a combination of the ultrasonic transducer of Kibblewhite with the thread forming fastener of Fulmer, because the person of ordinary skill in the art at the time the present invention was made would not have known how to directly measure the average temperature increase due to the heat generated during thread formation during the installation process and would not have known how to compensate for the effects of thermal expansion in conjunction with a thread forming fastener, which would have lead the person of ordinary skill in the art at the time the present invention was made to expect that such a combination of elements would not be useful for making ultrasonic load measurements in a thread forming fastener.

In view of the foregoing, it is submitted that Fulmer and Kibblewhite are not properly combined under 35 U.S.C. §103(a), and that the various formulated rejections of applicants' claims based on the proposed combination of Fulmer and Kibblewhite are properly reconsidered and withdrawn.

It is further noted that the Office Action of May 8, 2007, rejects claims 8, 9, 17 and 18 under 35 U.S.C. §103(a) as being unpatentable over a proposed combination of Fulmer, Kibblewhite and Hoffmeister et al. (referring to International

Publication No. WO 00/63565). In addition to the foregoing, which applies equally to a proposed combination of Fulmer, Kibblewhite and Hoffmeister et al., the following is noted.

Firstly, the proposed combination of Fulmer, Kibblewhite and Hoffmeister et al. is not applied to the subject matter of applicants' invention, as claimed.

At Paragraph 15 of the Office Action of May 8, 2007, it is correctly stated that "Fulmer, as modified by Kibblewhite, fails to teach that the ultrasonic transducer further includes an information storage medium applied to the ultrasonic transducer and that the information storage medium is a bar code". At Paragraph 23 of the Office Action, it is similarly stated that "Fulmer, as modified by Kibblewhite, fails to teach applying an information storage medium to the ultrasonic transducer, wherein the information storage medium includes markings corresponding to data associated with the fastener and applying a bar code to the ultrasonic transducer". However, in each case, Hoffmeister et al. is then incorrectly cited for purposes of teaching "that the ultrasonic transducer further includes an information storage medium 4 applied to the ultrasonic transducer...." (emphasis added).

The Office Action of May 8, 2007, cites U.S. Patent No. 6,843,628 "as an English translation of WO 00/63565". A review of U.S. Patent No. 6,843,628 fails to reveal any mention of an ultrasonic transducer, either in combination with the fastening means 1 or the disclosed alternative information storage means

(including bar codes, and read/write memory devices such as microchips and integral magnetic sections). Consequently, while Hoffmeister et al. can fairly be said to disclose an information storage medium 4 applied to a fastening means, Hoffmeister et al. fail to disclose an information storage medium 4 applied to an ultrasonic transducer, in accordance with applicants' claims 8, 9, 17 and 18, as is suggested in the Office Action of May 8, 2007.

Secondly, International Publication No. WO 00/63565 was published (in German) on October 26, 2000. Consequently, October 26, 2000, represents the earliest date that can be attributed to Hoffmeister et al. However, the present U.S. Patent Application claims the benefit under 35 U.S.C. §120 and 35 U.S.C. §365(c) of the filing date of U.S. Provisional Application No. 60/264,877, filed on January 29, 2001, which is less than one year from the effective date of October 26, 2000, attributable to Hoffmeister et al. Accordingly, it is submitted that Hoffmeister et al. is not properly cited for purposes of rejecting claims in this Patent Application.

In view of the foregoing, it is submitted that the rejection of claims 8, 9, 17 and 18 under 35 U.S.C. §103(a) as being unpatentable over a proposed combination of Fulmer, Kibblewhite and Hoffmeister et al., is also properly reconsidered and withdrawn.

Reconsideration of this patent application is, therefore, respectfully requested, and corresponding action

is earnestly solicited.

As a final matter, applicants further enclose an "Information Disclosure Statement" which is being submitted to inform the Patent Office of additional information considered in this matter. Because the enclosed Information Disclosure Statement is being filed after the mailing of a first Office Action on the merits, and before a final action, a notice of allowance or an action that otherwise closes prosecution of the application has been mailed for this Patent Application, consideration of the enclosed Information Disclosure Statement is respectfully requested pursuant to 37 C.F.R. §1.97(c). The fee set forth in 37 C.F.R. §1.17(p) is submitted herewith.

Respectfully submitted,



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